

Appl. No.: 10/016,277
Filed: November 2, 2001
Page 2

Amendments to the Specification:

Page 6, lines 7-19, please amend the paragraph as follows:

A₁

The composition further includes a photoinitiator capable of reacting with the polymerizable monomer and/or oligomer components of the composition upon exposure to actinic radiation. The selection of photoinitiator determines the frequency range at which the composition is curable. Suitable photoinitiators include ~~1-hydroxycyclohexyl 1-~~ hydroxycyclohexyl phenyl ketone (~~IRACURE~~ IRGACURE 184), mixtures of bis (2,6-dimethoxybenzoyl)-2,4,4-trimethylpentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenylpropan-1-one (~~IRACURE~~ IRGACURE 1700), mixtures of trimethylbenzophenone and methylbenzophenone (ESACURE TZT), bis acyl phosphine oxide (IRGACURE 819), and mixtures thereof. The above-described IRGACURE and ESACURE photoinitiators are commercially available from Ciba of Tarrytown, NY and Sartomer Company of Exton, PA, respectively. The photoinitiator triggers polymerization and cross-linking of the monomers and/or oligomers present in the composition. Preferably, the photoinitiator is present in an amount of about 1 to about 10 weight percent.

Page 6, beginning at line 24 through page 7, line 2, please amend the paragraph as follows:

A₂

Although other types of actinic radiation may be utilized, it is preferable to cure the maskant film 16 at between about 60°F and about 120°F using ultraviolet, visible light or black light radiation. In a particularly preferred embodiment, an ultraviolet radiation source having a wavelength of about 200 to about 500 nm, preferably about 200 to about 450 nm, and an intensity of about 100 $[[W/cm]] \underline{W/cm^2}$ to about 600 $[[W/cm]] \underline{W/cm^2}$, preferably about 120 $[[W/cm]] \underline{W/cm^2}$ to about 185 $[[W/cm]] \underline{W/cm^2}$, is used to cure the maskant composition. It is preferable for the radiation source to be substantially perpendicular to the substrate during curing. The cured maskant film 16 preferably has a thickness of about 5 to about 20 mils, more preferably about 8 to about 12 mils.

Appl. No.: 10/016,277
Filed: November 2, 2001
Page 3

Page 7, beginning at line 27 through page 8, line 9, please amend the paragraph as follows:

A3
The line sealant 24 is formed from a curable composition similar to the curable compositions described above for the maskant film 16. The line sealant 24 is formed from a composition comprising one or more polymerizable monomers and/or oligomer components, one or more photoinitiators, and one or more fillers or other ingredients, such as wax or synergists. The polymerizable monomer and/or oligomer components are typically selected from the group consisting of acrylates, diacrylates, and urethane acrylates or diacrylates. Particularly preferred monomers and oligomers include isobornyl acrylate (SARTOMER SR506), isooctyl acrylate (SARTOMER 440), urethane acrylate (SARTOMER CN973J75 or SARTOMER CN 964), and mixtures thereof. As with the maskant film 16 composition, the choice of photoinitiator will determine the frequency range at which the composition may be cured. Preferred photoinitiators include ~~1-hydroxycyclohexyl~~ 1-hydroxycyclohexyl phenyl ketone (~~IRGACURE~~ IRGACURE 184), bis acyl phosphine oxide (IRGACURE 819), and mixtures thereof.

Page 8, beginning at line 22 through page 9, line 9, please amend the paragraph as follows:

A4
The line sealant 24 is preferably cured by actinic radiation, such as ultraviolet radiation, visible light radiation or black light radiation, at room temperature. The range of wavelength of the radiation source is typically between about 200 nm to about 500 nm, with an intensity of about 100 $[[W/cm]] W/cm^2$ to about 600 $[[W/cm]] W/cm^2$. For the ultraviolet curable compositions, the wavelength is generally about 200 to about 350 nm and the curing time is generally about 5 seconds to about 20 minutes. For the visible light/black light curable compositions, the wavelength is generally about 380 to about 450 nm and the curing time is generally about 2 minutes to about 10 minutes. In one embodiment, the line sealant composition is cured by exposing the line sealant to one or more 600W fusion ultraviolet bulbs emitting wavelengths of about 200 to about 450 nm for about twenty minutes. In another embodiment, the line sealant is cured by exposing the sealant composition to a low intensity, low energy ultraviolet radiation source, such as one or more 40W fluorescent bulbs emitting radiation at a

Appl. No.: 10/016,277
Filed: November 2, 2001
Page 4

A4
CONT

wavelength of about 365 to about 410 nm for about twenty minutes. In yet another embodiment, the line sealant composition is cured by exposing the composition to a high intensity, low energy ultraviolet radiation source, such as a 400W black light emitting radiation in the range of about 365 to about 410 nm for about ten minutes. Although less preferred, it is also possible to cure the sealant composition using visible light by exposing the sealant composition to one or more 400W metal halide bulbs emitting radiation at a wavelength of about 420 to about 430 nm for about twenty minutes. The final thickness of the cured line sealant 24 is preferably about 6 mils to about 15 mils.

Page 10, line 23 through page 11, line 5, please amend the paragraph as follows:

A5

Once the lines are scribed 50 into the maskant, a line sealant composition is applied 60 to the scribed lines in order to prevent premature exposure of certain portions of the metal substrate to the chemical milling or other chemical treatment solutions. As described above, the line sealant composition is preferably radiation curable and substantially solvent-free. The line sealant composition is preferably applied 60 with a roller or cheesecloth. Once the line sealer is applied, the line sealant composition is cured 70 using an actinic radiation source, such as an ultraviolet or visible light radiation source as described above. Typically, the curing step 70 comprises exposing the sealant composition to ultraviolet radiation having a wavelength of about 200 to about 350 nm and an intensity of about 160 to about 240 $[[W/cm]] \underline{W/cm^2}$ for a period of about 5 seconds to about 3 minutes. As described in connection with the maskant curing step 40 above, curing of the line sealant 70 can be accomplished in a variety of ways, including placing the line-sealed substrate in a curing chamber containing a plurality of radiation-emitting bulbs or moving the substrate past a bank of radiation-emitting bulbs.